# Financing Pioneering Railways in São Paulo: The Idiossyncratic Case of the Estrada de Ferro Sorocabana (1872- 1919)

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RESUMO

*A história da Estrada de Ferro Sorocabana é peculiar pelo fato de que empresários privados brasileiros, o governo federal e o governo do Estado de São Paulo foram sucessivamente seus proprietários e controladores, sendo arrendada entre 1907 e 1919 a um grupo estrangeiro. O transporte de café não representou, no início, uma parcela expressiva de suas receitas de frete, e mesmo depois não atingiria a importância que teve na Mogiana e Paulista, consideradas as típicas "ferrovias de café." Diferentemente dessas empresas, que eram lucrativas, a Sorocabana manteve-se em situação financeira bastante difícil ao longo de quase todo o período entre 1872 e 1919. Este artigo explora as razões desta permanente precariedade financeira. A literatura sobre as ferrovias pioneiras no Brasil enfatiza que a lucratividade dependia crucialmente do tipo de proprietário e também se o café era a principal fonte de receita de frete. Essa e as seguintes hipóteses são avaliadas: expectativas exagera-damente otimistas sobre os fluxos futuros de caixa; má gestão; falta de governança engendrada pela estrutura de financiamento; má sorte; ou políticas governamentais equivocadas.*

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*ferrovias, estrutura de financiamento, investimento estrangeiro*

ABSTRACT

*The history of the Estrada de Ferro Sorocabana is highly idiosyncratic. Owned and run successively by Brazilian businessmen, the federal government, and the government of the State of São Paulo, it would be rented out to a foreign company over the period 1907-1919. When it began operating, coffee did not represent a significant share of its overall freight receipt, and even later it would not achieve the relevance it did in Mogiana and Paulista, considered the typical "coffee railways." Unlike these two profitable companies, Sorocabana remained in dire financial straits almost throughout the period 1872-1919. This paper focuses on what lay behind its financial distress. The literature on pioneering railway companies in Brazil emphasises that profitability hinged on the type of ownership as well as on whether coffee was the main source of freight receipt. Besides this, the following hypotheses are evaluated: oversanguine expectations about future cash flows; poor management; shortage of governance engendered by its financing structure; bad luck; and bad governmental policy.*

KEY WORDS

*railways, financial structure, foreign investment*

JEL Classification

*N85, N76, N26*

## *INTRODUCTION*

Most of the historiography on business enterprises has focused on the analysis of successful cases, neglecting the potential contribution the study of entrepreneurial failures can provide to the understanding of a given historical context. Contrariwise, this paper examines the untoward history of the Estrada de Ferro Sorocabana (hereafter Sorocabana), motivated by the belief that it can shed light on the circumstances surrounding the early stages of the railway business in Brazil.

Two major dichotomies are recurrent in the literature about the performance of pioneering railway companies in Brazil. One relies on the form of ownership: it is often claimed that private-owned railway companies provided better services to their customers, were better run and more profitable than their government-owned counterparts. The other lies in the type of good hauled, more specifically whether or not coffee was responsible for most of the volume transported or for a high fraction of the overall freight receipt.[1]

Against that background, the history of the Sorocabana seems peculiar since it embraced both the opposite poles of those two dichotomies. Initially a privately owned and operated company, it subsequently functioned as a state-owned but privately operated enterprise and, later still, as a state-owned and state-operated company.[2] Hence, private and state ownership as well as private – national and foreign – and state control made up its history. As regards the goods transported, the Sorocabana was not created with the main purpose of carrying coffee, contrasting thus with other contemporaneous railways then operating in the State of São Paulo. During the Civil War in the United States, when American cotton exports to Britain were disrupted, the cultivation of that fibre boomed around the region of Sorocaba. At al-

1 For DUNCAN (1932, 9-10), that dichotomy was straightforward: "*As a general rule those roads which haul large amounts of coffee are prosperous, and those roads handling little coffee have either small net operating revenue, or deficits.*"

2 Beginning as a private company in 1872, its control was transferred in 1901, after a lengthy period of ever increasing financial distress, to a receiver nominated by the federal government, then its main creditor. In 1904, the latter purchased it on an auction, selling it shortly afterwards to the government of the State of São Paulo, which in turn leased it in 1907 to a foreign enterprise, the Sorocabana Railway Company. The foreign control lasted until 1919, when the State of São Paulo took it over again, owing to the deterioration of its physical capital and the worsening of the quality of services supplied. Thereafter, and until the beginning of the 1990s, the Sorocabana was both state-owned and state-run.

most the same time the United States began to resume its exports, a cotton trader from Sorocaba, Luiz Matheus Maylasky, organised the foundation of the Sorocabana with a view to, among other objectives, reducing the costs of cotton freight. Later, that railway extended its operation to regions producing coffee at a larger scale. Even though to a much smaller extent than the two "coffee railways" – the Paulista and the Mogiana – coffee began to account for an increasingly greater share of the Sorocabana's total freight. Nonetheless, that shift never led it to match the profitability of those two companies nor prevented it from recurrently suffering dire financial stresses throughout the following decades.

What lay behind the Sorocabana's successive failures? Sanguine expectations about prospective cash flows? Poor management? A governance shortage engendered by its financing structure? Or merely bad luck? This paper addresses these issues focusing on two periods: one, 1872-1901, wherein the Sorocabana was owned and run by Brazilian businessmen, and the other, 1907-1919, during which the company, however owned by the State of São Paulo, was under the control of a foreign financial syndicate headed by Percival Farquhar. The analysis is structured as follows. Section 1 tries to identify at a more conceptual level the problems promoters of railways encounter in undeveloped economic environments. Section 2 and section 3 examine, respectively, the two above-mentioned periods. The last section highlights the main conclusions the available evidence allows to derive.

## *1. SOME CONCEPTUAL REMARKS ON THE RAILWAY BUSINESS IN THE EARLY STAGES OF THE ECONOMIC DEVELOPMENT*

The history of railway financing in many countries throughout the $19^{th}$ century evidences a reasonably similar pattern. (EICHENGREEN, 1995). These similarities stem unquestionably from some characteristic features involving the railway business, the most remarkable of which being externalities and indivisibility of investments. The construction of railways is likely to generate returns that exceed those reaped by their promoters. That gap between social and private benefits **may** therefore provide a rationale for welfare-enhancing government intervention. Moreover, in the context of incipient financial markets characterising countries in their early stages of economic development, the requirement of huge amounts of funds to finance the construction of a railway, far beyond individuals' wealth, could hardly have been fulfilled spontaneously. This also gave grounds to some form of extra-market interference – such as, for example, dividend or interest guarantees – with a view to addressing the fund-raising deadlock.

Indeed, in the 19th century railways were by and large built thanks to the government support – be it subsidies, state-owned enterprises, or land grants. Moreover, another usual way of circumventing the financing hurdle hindering railway expansion on that time was foreign capital – essentially British capital before the 1880s. In the middle of that century, London had already a relatively developed capital market. Merchants, aristocrats, and industrialists (or the heirs of pioneers of the Industrial Revolution uninterested in remaining managing manufactures) sought more profitable allocation for their mountainous amounts of savings than their own businesses or public bonds. Either as direct or portfolio investments, these funds effectively contributed to set up railway systems in a great number of countries – as in the United States, Canada, India and Brazil, all of which interested in absorbing not only the (cheaper) finance Britain could provide, but also her technology and capital goods.

Furthermore, circumstances prevailing in the 19th century magnified the adverse effects of informational asymmetries inherent to financial transactions. The literature on the economics of information emphasises two types of problems: selection and incentive. The selection problem occurs when entrepreneurs seeking for money have information about their own projects that is not available to potential investors, who consequently cannot know the real **characteristics** of the various assets wherein they can invest, what prevents them from evaluating correctly actual risks and returns. The incentive (or moral hazard) problem emerges once suppliers of finance part with their money. Having large latitude for risky behaviour, the recipients of funds may act in a way that damage investors. (STIGLITZ 2000; EICHENGREEN 1995). These problems springing from "private information" were acute in the 19th century, exacerbating the difficulty in raising private funds for financing railway projects. Mechanisms that could remove or at least mitigate those problems were blunt or did not exist at all. Apart perhaps from

England, the most developed countries then lacked effective governmental regulation and oversight ensuring companies to disclose reliable financial information and the protection of investor rights. Even when mandatory rules existed, enforcement could not be taken for granted.

In the light of these circumstances, how did railways' promoters manage to get large amounts of funds to undertake their investments? Shleifer and Vishny (1997) point out some reasons whereby investors are willing to provide capital to firms. First, entrepreneurs have incentives to build and maintain reputation. Second, investors may become overoptimistic in periods of market euphoria, being fairly subject to manias and herd behaviour, reason for which they may supply funds even for unsound projects. Third, investors are more inclined to provide funds when they are endowed with some power, which means either legal protection against managerial expropriation or concentration of ownership of, or financial claims (debt) on, the firm in the hands of a large investor.

Presumably, reputation was not an asset to which promoters ascribed a high value at the beginnings of the history of railways – the benefits of swindles probably far exceeding the costs of reputation loss. Legal protection in the form of adequate regulation and effective enforcement seemed at best to be paltry, if not utterly absent. On the other hand, waves of overconfidence and euphoria alternated with exaggerated pessimism have been frequent in the history of capital markets and trading of assets. (KINDLEBERGER, 1996). Railway manias, in particular, occurred in England in the 1830s and 1840s, and in Germany and the United States in the early 1870s. Unwarranted by any economic criterion, most of those speculative investments either went bankrupt shortly after being realised or were not undertaken at all, in spite of enabling promoters to reap abnormal profits.

Large creditors (banks) and holders of large blocks of equity shares might have the incentives and power to screening the quality of railway projects and monitoring their management once they begin to be built – mitigating the free-rider problem preventing small shareholders or creditors from affording monitoring. Nonetheless, concentrated ownership of shares in, or of debt claims on, a single or few investors may also be harmful to the other stakeholders (minority shareholders, bondholders etc.), who run the risk of being expropriated by large investors. This risk appeared to be quite high in the 19th century financial landscape inasmuch as this period missed the regulatory framework that could preclude opportunistic behaviour.

Taking into account all the above-mentioned difficulties to raise railway financing and the purported spillover effects railways could create, no wonder that interest or dividend guarantees were a widespread resort provided by governments throughout the world. But guarantees weakened the incentives for private investors to monitor management. Unless government undertook that task, managers would enjoy ample scope for discretion, which could be directed to exploit "private benefits" as well as to divert firms' resources at the expense of taxpayers and/or minority shareholders.

Financial market failures were much more severe in peripheral countries, making the financing of railways even more problematic. As a rule, low rates of savings and shallow financial markets forced those countries to seek foreign (direct or portfolio) investment to promote the construction of their so much needed railway infrastructures. Furthermore, given that even during the Classic Gold Standard currency devaluation in those countries was by no means a rare event, currency mismatching between receipts and expenses caused dramatic troubles. Whereas tariffs were denominated in domestic currencies, the debt service and the costs of most capital goods and inputs (locomotives and coal, for example) were largely denominated in foreign currencies. Therefore, external shocks – wars, changes in the terms of trade, or halts in capital inflows – represented a serious disturbance not only to railways' shareholders but also to their bondholders – who faced a great risk of default on their claims.

## *2. THE SOROCABANA AS A PRIVATELY-OWNED AND PRIVATELY-OPERATED ENTERPRISE: 1872-1902*

Unravelling the supply of cotton to the European textile manufactures, the American Civil War induced a surge in the production of that raw material around the region of Sorocaba in the 1860s. Thanks largely to the contribution of that region, cotton exports by the Province of São Paulo increased tremendously: from 1.3 tonne in 1862 to 2,898.6 tonnes in 1865, peaking at 10,204.6 tonnes in 1871. However, as the United States managed progressively to resume its cotton exports, those of São Paulo declined at a quicker pace, reaching just 643.1 tonnes in 1877. (CANABRAVA, 1951, p. 301).

Motivated by the high level of cotton exports and intending to reduce the underlying costs of transport, a cotton trader, Luiz Matheus Maylasky, raised capital with the purpose of building a railway, the Estrada de Ferro Sorocabana. (CANABRAVA, 1951, p. 243, 301). He requested from the Province of São Paulo an "interest guarantee" at seven per cent a year on the investment to be undertaken. As seen above, this form of governmental intervention was a practice widely adopted throughout the world in the 19$^{th}$ century and was warranted on market failure grounds.

Maylasky was the decisive protagonist in constituting the company, winning over as the first shareholders of the Sorocabana some landowners from the region of Sorocaba as well as some capitalists and **rentiers** from the city of São Paulo (like Bernardo Gavião Peixoto) and from Rio de Janeiro. (COMPANHIA SOROCABANA, 13-1-1881, p. 136). He remained as the president of the company from its foundation in 1872 to May 1880, when a shareholder meeting decided to oust him.

*TABLE 1*

| Year | Paid-up capital | Cost of the lines and equipment |
|---|---|---|
| 1873 | 3,080:000$000 | 3,694:000$000 |
| 1874 | 4,000:000$000 | 5,463:000$000 |
| 1876 | 4,119:000$000 | 7,073:565$000 |
| 1877 | 4,486:000$000 | 7,164:764$000 |
| 1878 | 4,681:000$000 | 7,164:764$000 |

Source: COMPANHIA SOROCABANA (various issues).

Part of the difficulties that led to that outcome can be traced to the period of construction of the railway's first track, inasmuch as the logic underlying the interest-guarantee scheme was not complied with. The arrangement was supposed to function as follows: the company should raise its capital through the issuance of equity capital, which would be used to finance the construction of the railway and the purchase of equipment. While the railway was not generating profit, the Province of São Paulo should provide shareholders with the payment of the seven-per-cent interest guarantee – reckoned on the basis of the authorised capital. However, the capital raised through the sales of equity shares was not enough to cover the overall outlays on the construction of the railway and the purchase of machinery. As shown in Table 1, that gap widened rapidly in the first three years, having to be financed by debt.

Even before beginning its operation, the Sorocabana had already borrowed 304:573$033 from the Deutsch Brasilianische Bank, as an advance on the 10th share call to the shareholders. (COMPANHIA SOROCABANA, 15-2-1874). In 1877, the Sorocabana's overall debt achieved 2,670:113$062, of which 1,816:488$780 owed to the German bank, and the remainder being borrowings from suppliers and contractors. This remarkable increase in the level of bank debt led the Sorocabana to tap the bond market, where it issued 4,600 bonds – each worth £50, at a fifteen per cent discount – at six per cent interest a year to be paid every six months and amortisation at one per cent. (COMPANHIA SOROCABANA, 17-3-1878). Sold to the public at an exchange rate of 24 1/8 pence/mil-réis, those bonds yielded 1,944:870$660, allowing the Sorocabana to liquidate its debt to the German bank. The New London Brazilian Bank was elected as the bondholders' banker.

The outstanding symptom that reveals the severity of the financial distress the Sorocabana already faced in the 1870s was the utilisation of the guarantees on interest advanced by the Province to finance the prolongation of lines and the purchase of rolling stock, and even to pay the debt service, rather than ensuring shareholders a minimal return on their invested capital.[3]

3 In August 1875 part of the interest guarantee was spent on general expenditures rather than on dividend payments. In the following year, the interest guarantees were used to meet the debt service and to buy trains while dividend payments were postponed at the expectation that the railway was to be sold to a foreign company, since shareholders were not willing to put additional money to finance the conclusion of the railway. The transaction ended up not being realised because of a squabble around the level of exchange rate to be adopted to calculate the interest guarantee the Province would have to provide (the guarantee was denominated in mil-réis). See COMPANHIA SOROCABANA (3-9-1876).

What gave rise to the Sorocabana's financial problems already in its first years of existence? Several hypotheses can be put forward: a) they were inescapable in the early stage of any railway company; b) they were the result of unrealistic expectations about potential demand; c) they were the outcome of outright fraud (fund diversion); d) or of inefficient management; e) or, still, merely bad luck. Although the available evidence prevents a definitive conclusion, some light can be cast on these issues.

First, in 1878 the average costs per kilometre built for the Sorocabana and Paulista were, respectively, 56 and 74 contos de réis. Both traversed fairly similar topographic regions and Paulista was then one of the most profitable railway in Brazil. (SUMMERHILL, 1998). Notwithstanding differences in their gauges and perhaps in the qualities of the inputs used,[4] that rough comparison seems to discredit the view that the construction costs of the Sorocabana were too exaggerated. If they were, therein could have lain the reason for the insufficiency of new equity capital as well as for the absorption of interest guarantees into expenditures other than dividends, making investors even more reluctant to provide further capital.

Second, in comparison with Paulista and Mogiana, revenue per kilometre of line for the Sorocabana was much lower, as shown in Table 2. Insofar as the superior operating performance of Paulista and Mogiana cannot be assigned to learning-by-doing gains arisen from a longer period of operation,[5] either the potential of freight around the region the Sorocabana served was really low or there was some type of mismanagement. The first possibility is somewhat underpinned by the huge reduction in the cotton exported by the region while no other agricultural commodity generated demand for railway services at a scale sufficiently large to improve the Sorocabana's freight receipt.[6] Over the period 1876-1879, the Sorocabana transported on average 14,750 tonnes a year, whereas transport by the Mogiana and Paulista

4 The Sorocabana had a one-meter gauge while that of Paulista measured 1.60 meter.

5 Paulista began to operate in 1872 and the Mogiana and the Sorocabana in 1875.

6 LEWIS (1991, p. 24) suggests that the expanding urban centres as well as the rapid development of regions specialised in the growing of coffee could have created demand to the Sorocabana for carrying a range of foodstuffs and industrial raw materials if Sorocaba and its neighbourhood would have managed to produce these agricultural products and to provide them to the rest of the province.

averaged, respectively, 32,732 and 87,229 tonnes a year. Coffee freight was immaterial for the Sorocabana, be it in total volume (averaging only 306 tonnes a year over the same period) or relatively to its total freight.[7] Differently, the Mogiana hauled on average 14,587 tonnes of coffee a year. Unlike Paulista and the Mogiana, the Sorocabana did not yet run regions where the cultivation of coffee was important. Therein might lie the investors' unwillingness to subscribe thoroughly the new capital shares offered by the Sorocabana, forcing it to resort to debt finance. In fact, the debt/equity ratios for Sorocabana were strongly higher than the "coffee railways", as Table 3 testifies.

*TABLE 2 – REVENUE (IN CONTOS DE RÉIS) PER KILOMETRE OF LINE*

| ANO | PAULISTA | MOGIANA | SOROCABANA |
|---|---|---|---|
| 1876 | 10:624$ | 4:609$ | 2:362$ |
| 1877 | 9:965$ | 4:798$ | 2:142$ |
| 1878 | 11:868$ | 4:155$ | 2:547$ |
| 1879 | 11:264$ | 4:646$ | 2:530$ |

Source: SAES (1974, p. 13, 66-68).

As regards managerial quality and integrity, it can be noted that the way funds were channelled into the Sorocabana might imply a number of agency problems. The first opposed outside shareholders' interest to management and controlling shareholders. Inasmuch as ownership appeared to be concentrated and composed by informed investors (bankers and capitalists) holding significant blocks of shares, the scope for expropriating them seems to be limited. Concerning creditors, it is highly probable that banks, contractors, and suppliers were endowed with information and power to supervise the company, contrasting with bondholders whose incentives to monitor were relatively weak, on account of the free-rider problem. No reference was found concerning whether the New London Brazilian Bank effectively

7 Out of the total volume (in tonnes) transported by the Sorocabana over that period, cotton represented nearly seven per cent.

fulfilled the task it had been ascribed, namely to look after bondholders' interests. Finally, the governance provided by the Province of São Paulo upon the Sorocabana's management appeared to be weak and vulnerable to conflicts of interest. Albeit the guarantees of interest were tantamount to a subsidised credit – since their repayments, if made, would be interest-free – provincial authorities purportedly monitored railways enjoying that kind of fiscal transfer by simply appointing a "fiscal engineer", who should be responsible for supervising their accounting, physical installations, maintenance, and safety procedures. Whereas the same fiscal engineer oversaw the Paulista and the Mogiana, there was one exclusive fiscal engineer to supervise the Sorocabana, which moreover paid him. Later, with the advent of the Republic, it was created the "Inspetoria das Estradas de Ferro", in charge of the same function.

A shareholder meeting on May 15th 1880 dismissed Maylasky. Besides accusing Maylasky of illicit behaviour, including embezzlement, the new management, headed by Francisco de Paula Mayrink, blamed in their first report both the debt burden and the small flows of transport for the Sorocabana's financial distress.[8] Mayrink envisaged as the only way to boost the company its extension to areas where coffee production was expanding, like the region of Botucatú. (COMPANHIA SOROCABANA, 11-12-1882). Thus, the original plan of setting up a "cotton" railway was relinquished, hopes of recovery being shifted to coffee.

8 According to the company's report of 11-12-1882, the debt load resulted from the gap, reckoned to amount to 3,262:916$, between the cost of building the railway to Ipanema (the main trunk), 7,262:916$, and the paid-up capital. The low volume of freight in turn was attributed to the low level of output produced in the region served by the Sorocabana.

*TABLE 3 – RAILROAD FINANCE – RELATIVE WEIGHT OF PRINCIPAL SOURCES OF FUNDS (CONSOLIDATED BY COMPANY)*

| | 1870s | 1880s | 1890s | 1900-1905 |
|---|---|---|---|---|
| Shareholders' equity | | | | |
| Paulista | 88.3 | 90.4 | 66.8 | 75.9 |
| Mogiana | 90.4 | 69.1 | 77.2 | 81.3 |
| Ituana | 69.7 | 64.2 | | |
| Sorocabana | 66.4 | 44.8 | 36.3 | |
| Bond Issues | | | | |
| Paulista | 3.9 | 8.8 | 31.7 | 23.4 |
| Mogiana | 0.0 | 19.3 | 6.4 | 3.2 |
| Ituana | 0.0 | 8.1 | | |
| Sorocabana | 7.8 | 45.8 | 37.7 | |
| Profit Guarantees | | | | |
| Paulista | 1.3 | 0.2 | 0.0 | 0.0 |
| Mogiana | 7.0 | 2.3 | 8.9 | 13.6 |
| Ituana | 8.4 | 16.6 | | |
| Sorocabana | 0.1 | 0.0 | 6.8 | |
| Bank Credit | | | | |
| Paulista | 0.0 | 0.0 | 0.2 | 0.0 |
| Mogiana | 0.0 | 0.0 | 0.6 | 0.0 |
| Ituana | 2.9 | 0.7 | | |
| Sorocabana | 15.3 | 3.1 | 2.0 | |

Source: HANLEY (1995, p. 243, 269).

The ascent of Mayrink also reflected a rearrangement in the Sorocabana's ownership composition. Whilst the Maylasky's presidency represented the predominance of investors from São Paulo, mainly from commercial and financial sectors, Mayrink expressed the mounting power over the company of investors from the Rio de Janeiro – city to where the company's headquarter had moved. In this respect, aside from older investors from São Paulo (embracing merchants, bankers, and landowners like Maylasky, B. A. Gavião Peixoto e Nicolau Vergueiro), the Sorocabana's shareholders included at the end of 1881 Mayrink, the Banco Comercial do Rio de Janeiro and the Banco Industrial e Mercantil. In 1888, out of 60,000 shares outstanding, Mayrink held 17,000 and the Banco Comercial do Rio de Janeiro owned 6,000, the third largest shareholder, B. A. Gavião Peixoto, holding only 3,700 shares. It should be noted that when Mayrink assumed the presidency of the Sorocabana he was also a director of the Banco Comercial do Rio de Janeiro,[9] implying that he had the virtual control over the company.

The large block of shares controlled by Mayrink suggests that he was actually confident of the Sorocabana's prospects. Outside investors however seemed to have a contrasting view. In 1880 only 4,718 contos de réis had been realised, even though the authorised capital was 7,200 contos de réis, whereas in 1888, already under Mayrink's management, despite the increase in the authorised capital to 12,000 contos de réis, the paid-up capital was only 5,846. The accomplishment of the Sorocabana's extension plan proposed by Mayrink would therefore require additional borrowing. Indeed, while the Sorocabana's length increased from 132 km in 1879 to 332 km in 1889, its debt jumped from 3,917 contos de réis in 1880 (of which 1,918 as £50 gold-bonds) to 8,328 in 1887 (of which 1,648 in £50 gold-bonds).[10] Nominal revenues also increased over that period, endorsing Mayrink's 1882 forecast over the potential for exploiting new, coffee-producing regions. On the other hand, net revenues were probably not enough to match the increasing debt servicing. Consider for the sake of the argument that the debt service averaged seven percent. Given that the value of the debt in 1880 was 3,917 *contos*, it would entail 270 contos de réis worth of service; the same

9 The Banco Comercial do Rio de Janeiro was the oldest private bank of the Rio de Janeiro, and Mayrink's father was one of its largest shareholders. See LEVY (1980).

10 On the dramatic increase in the Sorocabana's gearing ratios in the 1880s, see Table 3.

reasoning implies an estimate of 582 contos de réis for servicing the debt in 1887. Suppose still that these two estimates represent the average amount spent annually as debt service over, respectively, 1880-1884 and 1885-1889. Thus, both estimates of the amount paid as debt service far exceeded, on average, the net operating revenue over 1885-1889 (see Table 4). Even in 1889, the year when net operating revenue peaked, reaching 579 contos de réis, average profits net of debt obligations were negative.

*TABLE 4 - PERIOD AVERAGE ANNUAL NET OPERATING REVENUE*

| | |
|---|---|
| 1880-1884 | 45:791$ |
| 1885-1889 | 308:078$ |

Source: SAES (1974, p. 66-68, 159-161).

In the 1890s, the Sorocabana's management made some decisions that worsened its financial accounts. Together with the macroeconomic shocks that battered the Brazilian economy throughout that decade, these decisions ushered in the process that culminated in the transfer of control over the Sorocabana to its main creditor. Firstly, the Sorocabana merged with the Estrada de Ferro Ituana in 1892 – a middle-sized railway company whose operation zone partly overlapped that of the Sorocabana – giving rise to the Companhia União Sorocabana e Ituana (CUSI). The merger was undertaken to eschew harmful competition. The Ituana's financial accounts seemed then not to be bad, notwithstanding its high external liability in the form of bonds, which was added to the Sorocabana's debt.

Also in 1892 the CUSI agreed with the State of São Paulo to renounce the right to interest guarantees, apparently because its management expected to increase operating revenues before long. (CUSI, 18-3-1893). That agreement established in addition that the company should reimburse its debt to the government of São Paulo, paying for the sake of amortisation 100 contos de réis a year, totalling 2,200. Hence, that financial burden added to that related to servicing the internal and external debt.

The third event that heightened even more the financial pressure on the new company was the contract with the Banco Construtor do Brasil, whereby the bank would be responsible for constructing new tracks, extensions and branches as well as for providing funding for these infrastructure works through tapping capital markets. Clashes marked the relationships between the bank and the CUSI, leading the latter to the breach of contract. The litigation resolution set down that the CUSI owed to the Banco Construtor an amount worth 17,600 contos de réis, to be paid through bonds at six per cent a year. Curiously enough, among Mayrink's investment portfolio, there was a stake in the Banco Construtor.

The adverse impacts of these occurrences on the company's financial condition were magnified by the macroeconomic context of the 1890s. Brazilian currency underwent recurrent depreciation throughout that decade,[11] increasing the CUSI's external debt service. Part of the debt denominated in pounds was contracted by the "seção Sorocabana", which in 1898 was comprised of 3,590 bonds (each worth £50), and the remainder was the liability brought by Ituana to the new merged company – 1,500 bonds, each worth £100. According to the company's management, the continued depreciation had caused "calamidade" (calamity) to its foreign liability. A company's report asserted in 1898 that the London & Brazilian Bank, as the representative of the holders of bonds denominated in pounds, had required the foreclosure on the mortgage – its rails – on the grounds that the interest and amortisation had not been paid back. (CUSI, 2-5-1898, p. 12-14). The CUSI's managers argued that the depreciation of the mil-réis made it impracticable to maintain the debt service. In fact, even though tariffs were indexed to exchange rate movements (the "tarifa cambial"), there was a cap of 12 pence/mil-réis on the exchange rate used to adjust the value of the tariff. (PINTO, 1903, p. 161-162).[12] Inasmuch as the exchange rate had already plummeted to 7 pence/mil-réis, freight revenues hugely mismatched the burden of pound- denominated debts.

11 Two major views can be identified in the literature about the ultimate reason triggering the currency devaluation. One assigned it to the expansionary monetary policy undertaken by the first republican government. The other associates it with the Baring crisis sparked off in 1890, which had brought a halt in foreign capital inflows into peripheral countries.

Exchange rate depreciation also hit the Sorocabana by dint of higher input costs. As the CUSI's report of February 1897 underscored: "*In an unprecedented manner, exchange rate has been maintained at levels so low for a so long time that has caused the ruin of the public and private fortune and our company has been one of the most charged since, compelled to import inputs and coal, it is obliged to pay for them almost the triple they could cost if the exchange rate were at a reasonable level.*" (CUSI, 10-2-1897, p. 15). The Sorocabana's precarious financial situation can be illustrated by its income accounts in 1896:

*TABLE 5 – THE COMPANHIA UNIÃO SOROCABANA E ITUANA'S: FINANCIAL ACCOUNTS IN 1896*

| | |
|---|---|
| Bond-related interests | 2,926:270$000 |
| Floating-debt interests (*) | 394:000$000 |
| Debt amortisation paid to the State of São Paulo (**) | 220:000$000 |
| Total financial expenditure | 3,540:270$000 |
| Net operating revenue | 2,179:654$000 |
| Deficit | 1,360:616$000 |

Source: CUSI (10-12-1897).
(*) Debt not funded on bonds.
(**) Payments related to the Companhia Ituana and reimbursement of the interest guarantee received.

In spite (or because) of the mountainous debt burden, another group of investors took over the company in the 1890s. In 1892, out of 350,000 shares (of which 175,000 bearer shares), 33,550 belonged to Mayrink, 53,000 to João Pinto Ferreira Leite, and 50,000 to a syndicate the latter represented. At his first report as the company's president in 1897, Mr. Leite pointed out that Mayrink had been neglectful regarding the way he had dealt with the Banco Construtor, and that the breach of contract had severely damaged the company's financial accounts. Nonetheless, the new board maintained the former strategy of expanding the lines, in the hope of making the company profitable by enhancing freight revenues.[13] Indeed while the

12 Introduced in 1892, the "tarifa cambial" laid down the exchange rate of 20 pence/mil-réis as the base on which tariffs should be adjusted. Every fall of one penny in the ratio pence/mil-réis, up to the limit of 12 pence/mil-réis, should entail a 5% increase in the tariffs contractually determined. For example, if the exchange rate fell to 16 pence/mil-réis, tariffs should be increased by 20%, but if the exchange rate dropped to 10 pence/mil-réis, the total rise in tariff should not exceed 40%.

CUSI's lines totalled 340 km in length in 1890, the merger with Ituana resulted in an overall extension of 598 km in 1892, increased to 704 km in 1896 and to 893 two years later.

Despite the huge increase in the volume of coffee transported (that leapt from 16,000 tonnage in 1893 to 53,000 in 1899), the company failed to escape from receivership. Again, the origin lay in the debt overhang: the net operating revenue unceasingly fell behind the amount paid as interest, fees, and commissions. The floating debt (debt owed to contractors and suppliers for financing the construction of the railway prolongation) demanded interest rates ranging from 1.5% to 5.0% a month. The progressive loss of creditworthiness in turn made creditors to require ever increasing guarantees, which were partly met by Ferreira Leite himself and a bank to which he was linked – the Banco do Brasil e Norte América. In addition, Ferreira Leite had acquired bonds and shares issued by the company, what apparently indicates that he envisaged good perspectives for the CUSI.

The wave of lawsuits requiring the CUSI's liquidation led its control to be transferred to the Federal Government and to the Banco da República do Brasil (which was under the government's surveillance) – respectively, its largest creditor and its largest shareholder. In February 1901, the CUSI's president, João Pinto Ferreira Leite, was replaced by Francisco Casemiro Alberto da Costa, nominated by Joaquim Murtinho, the incumbent Minister of Finance. The appointee found a number of unorthodox practices on the company's accounting, estimating its total liability at nearly 117,000 contos de réis in 1901, which was actually an overtly underestimate, since his calculations of the external debt were based at an exchange rate of 27 pence/mil-réis while its market value oscillated around 7.5 pence/mil-réis (see Table 6).

There was a foreign bid for the CUSI of £1,750,000 – tantamount to 56,000 contos de réis at the exchange rate of 7,5 pence/mil-réis. That amount was insufficient to cover even the debt funded on gold-bonds and paper-bonds (and the unpaid interests), not to say the remaining creditors and shareholders.

13 In this respect, the above-mentioned report revealed some optimism: "*The flow of revenue is stimulating, notwithstanding the strong reduction in the coffee harvest and other causes brought about by the irritating crisis affecting the whole economic relationships of the country. Had they not existed, revenue would be much more higher.*"

*TABLE 6 – THE SOROCABANA: LIABILITY AT THE END OF 1901*

| | |
|---|---|
| Gold-bonds | 2,802:222$220 |
| Paper-bonds (in circulation) | 48,015:122$220 |
| Paper-bonds (to be redeemed) | 16,757:700$000 |
| Gold-bond interest | 1,671:864$410 |
| Paper-bonds interest | 48,360:798$000 |
| Interest guarantee reimbursement to the Federal government | 1,600:704$468 |
| Interest guarantee reimbursement to the State of São Paulo | 5,358:797$585 |
| Banco do Brasil e Norte-América | 2,425:850$980 |
| João Pinto Ferreira Leite | 2,426:710$100 |
| Bills to be redeemed | 21,298:320$000 |
| Obligations to creditors from the Rio de Janeiro | 5,528:625$652 |
| Total | 117,030:130$279 |

Source: CUSI (1901).

In light of these circumstances, the CUSI was liquidated. The Federal Government, its largest creditor, purchased it in 1904, by auction, for 60,000 contos de réis. Shortly thereafter, on April 18th 1905, the company was sold for £3,250,000 (nearly 65,000 *contos*) to the State of São Paulo, which financed the purchase by borrowing an amount of £3,800,000 from the Dresdner Bank.[14]

## *3. A STATE-OWNED ENTERPRISE RUN BY A FOREIGN HOLDING COMPANY (1907-1919)*

As a by-product of the Coffee Valorisation Program, the government of the State of São Paulo leased the Sorocabana in 1906. The rents to be received from that lease had to be used as guarantees to the £2,000,000 loan contrac-

14 There is some evidence suggesting that the price the government of São Paulo paid for the CUSI was not excessive. In 1902 a manager of the CUSI reported that a foreign company had offered £2,500,000 for it, while another source mentioned that the São Paulo Railway had bid it for £3,500,000.

ted to acquire the coffee output excess. On 22nd May 1907, the Government of the State entitled Percival Farquhar (from New York City) and Hector Legrû (from Paris) the right of exploiting the Estrada de Ferro Sorocabana on a lease contract. Both were represented on the occasion of signing the contract by Alexander Mackenzie, superintendent of the São Paulo Tramway, Light and Power Co Ltd and of the Rio de Janeiro Tramway, Light and Power Co Ltd. Farquhar had run the latter company at its first years of existence.

The lease contract involved a great number of provisions, the most important of which were: 1) the lease included all the lines and the rolling and fixed stock of the Sorocabana, as well as the exploitation of the navigation services over the Piracicaba and *Tietê* rivers; 2) the government had not only to conclude the construction of the branches from Itapetininga to Itararé and from Cerqueira César to Salto Grande do Paranapanema, but also to provide them with the rolling stock; 3) the lessee was allowed to build new lines, which could be added to the lease contract, if wished, under the terms it had been established; 4) the lease period was 60 years from July 1st 1907; 5) the lessee had to pay for the lease: 5.1) the debt service related to the borrowing from the Dresdner Bank; 5.2) annual interest payments at 6 per cent on the capital spent by the government on rail prolongation and other improvements; 5.3) 25% of the contractual net revenue (tantamount to the net operating revenue less the debt service to the Dresdner Bank, the interest on the Government's capital, and the interest on the lessee's capital recognised as such; 6) the lessee was authorised to issue gold-bonds at a 6% interest rate a year in order to finance new investments in infrastructure. (SÃO PAULO, 1907). Besides, the government consented the transfer of the lease to the Sorocabana Railway Company Ltd (SRCL), a publicly held company founded in the United States by the two original lessees.

Releasing the company from its former debt overhang, the lease could have ushered in a new, buoyant phase for it. Clodomiro Pereira da Silva, Professor of Transport at the Escola Politécnica (the School of Engineering in São Paulo) and the railway's inspector nominated by the government, foresaw that promising scenario in 1903, when the company had gone into forced liquidation:

> *"For the company's current situation contributed its management's incompetence, notably the latter. Liquidation saved the railway from its annihilation. However, its economic conditions are excellent and its future will be of the most prosperity providing there is a good management. It is enough to look at*

> *its revenue exceeding 10,000 contos and the net balances above 4,000. In the conditions of the respective zone, the revenue can reach 12,000 contos, and yield, with a high quality service, net balances of 5,000, but it is necessary sufficient rolling stock and capable management.*" (SILVA, 1903, p. 554).

Albeit Pereira da Silva was right with respect to prospective increases in the Sorocabana's revenues and net operating balances, his rosy prediction failed thoroughly. In 1919, the government of São Paulo had no alternative other than rescinding the lease contract.

### *3.1 The Sorocabana Railway Company: Operating Revenue and Traffic Density*

The thirteen years before the onset of the First World War were highly favourable for the coffee railways. According to the Companhia Mogiana's management:

> "*The first year of the new century showed a record of traffic and profit. In that year, the dividend was 12% a year. The period so auspiciously started represents, from the economic viewpoint, the* Mogiana*'s apogee. Indeed, for nearly thirteen years, the Company maintained a high level of return on its capital, at a chronometer's regularity.*" (A *Companhia* Mogiana no seu 75º aniversário, p. 19).

How was the SRCL's performance in the period over which the Sorocabana was under foreign control? It is worthwhile comparing it with the two most important railway companies operating in São Paulo, bearing in mind that the SRCL started his operation only in 1907.

Some authors contend that Sorocabana's Achilles heel lay in the composition of its freight, supposed to be the cause for the company's persistent underperforming. Duncan (1932, p. 103), for example, asserts that "*part of the difference in freight receipts, however, may be ascribed to the change in the relative percentages of coffee hauled. The lower percentage of coffee naturally cause the average receipts per ton kilometer to go down.*" In fact, there were huge differences between the SRCL and the two "coffee railways" as regards the volume of coffee transported as well as the fraction of the overall revenue coffee freight represented. As a percentage of the total revenue, coffee freight receipts were much lower for the SRCL than for the Mogiana and the Paulista (see Table 7). Concerning the SRCL's volume of transport in tonnes, coffee was responsible for 20% to 30 %, while the share of materials for construction ranged from 35% to 47%.

*TABLE 7 – VOLUME OF COFFEE HAULED (THOUSANDS OF TONNES) AND PERCENTAGE OF COFFEE IN THE OVERALL RECEIPT OF THE SOROCABANA, MOGIANA AND PAULISTA*

| Year | The Sorocabana | | The Mogiana | | Paulista | |
|---|---|---|---|---|---|---|
| | VCH | C/OR | VCH | C/OR | VCH | C/OR |
| 1907 | 107.6 | 41.2 | 325.3 | 50.3 | 527.1 | 60.3 |
| 1908 | 82.6 | 32.2 | 290.2 | 48.9 | 474.1 | 57.8 |
| 1909 | 112.1 | 36.8 | 371.1 | 53.0 | 629.7 | 61.0 |
| 1910 | 74.1 | 24.2 | 251.1 | 41.9 | 437.2 | 47.7 |
| 1911 | 70.9 | 22.2 | 276.4 | 40.8 | 489.7 | 46.2 |
| 1912 | 67.7 | 18.3 | 312.7 | 39.0 | 479.5 | 37.4 |
| 1913 | 92.7 | 21.6 | 334.1 | 36.3 | 532.9 | 39.5 |
| 1914 | 77.2 | 21.8 | 308.7 | 38.3 | 425.9 | 38.3 |
| 1915 | 109.1 | 26.5 | 414.0 | 44.9 | 601.0 | 48.2 |
| 1916 | 103.3 | 24.3 | 324.9 | 36.0 | 510.0 | 42.4 |
| 1917 | 90.0 | 19.9 | 340.6 | 35.9 | 526.3 | 41.6 |
| 1918 | 73.2 | 18.3 | 268.0 | 32.9 | 415.5 | 36.9 |
| 1919 | 39.2 | 6.8 | 171.8 | 20.2 | 235.4 | 20.1 |
| Average:1907-16 | 89.7 | 26.9 | 320.9 | 42.9 | 510.7 | 47.9 |
| Average:1907-19 | 84.6 | 24.2 | 306.8 | 39.9 | 483.4 | 44.4 |

Source: SAES (1974, p. 66-68).
Note: VHC: volume of coffee hauled; C/OR: percentage of coffee in the overall receipt.

However, reckoning the net revenue per tonnage-kilometre of line for those three railway companies, there emerge no stark discrepancies between the SRCL and the highly profitable Paulista and Mogiana over the period 1907-1916.[15] The average coefficients for these three companies were, respectively, 62 mil-réis per ton-km, 63 and 67 (see Table 8). Accordingly, these ratios do not indicate any major operational handicap tilting the SRCL for failure.

15 For SUMMERHILL (1998), Paulista was then the most profitable railway company operating in Brazil.

Nor did the SRCL display expenditure/receipts ratios systematically worse than those of the Mogiana, at least before 1917. And in some years the SR-CL's ratios approached those of the Paulista (see Table 9). Over the period 1907-1916, the SRCL, Mogiana and Paulista exhibited average ratios of, respectively, 53%, 57% and 45%. If performance is to be measured by these proxies and if the figures shown above are accurate,[16] it seems persuasive that the SRCL had no very serious problem at the operational level. Therefore, the contract cancellation in 1919 must be accounted for by other reasons.

*TABLE 8 – NET RECEIPTS (CONTOS DE RÉIS) AND NET RECEIPTS PER TON-KILOMETRE (MIL-RÉIS PER TON-KM): THE PAULISTA, THE MOGIANA, AND THE SOROCABANA*

| Year | The Paulista | | | The Mogiana | | | The Sorocabana | | |
|---|---|---|---|---|---|---|---|---|---|
| | NR | TK | NR/TK | NR | TK | NR/TK | NR | TK | NR/TK |
| 1903 | 10525 | 98169 | 107.21 | 7258 | 85864 | 84.53 | 3271 | 53764 | 60.84 |
| 1904 | 8988 | 93653 | 95.97 | 6910 | 78286 | 88.27 | 3296 | 54236 | 60.77 |
| 1905 | 9706 | 118041 | 82.23 | 6798 | 88746 | 76.60 | 3433 | 62359 | 55.05 |
| 1906 | 18414 | 161959 | 113.70 | 9798 | 107944 | 90.77 | 5719 | 76822 | 74.44 |
| 1907 | 14214 | 164204 | 86.56 | 9221 | 118919 | 77.54 | 5068 | 84428 | 60.03 |
| 1908 | 11802 | 167254 | 70.56 | 8328 | 113416 | 73.43 | 5390 | 85201 | 63.26 |
| 1909 | 13876 | 196651 | 70.56 | 9614 | 118813 | 80.92 | 7736 | 101550 | 76.18 |
| 1910 | 11826 | 153247 | 77.17 | 6750 | 112348 | 60.08 | 7011 | 100585 | 69.70 |
| 1911 | 14744 | 225744 | 65.31 | 8439 | 124537 | 67.76 | 7338 | 120122 | 61.09 |
| 1912 | 15784 | 270608 | 58.33 | 10871 | 149260 | 72.83 | 7903 | 135199 | 58.45 |
| 1913 | 15774 | 312328 | 50.50 | 9847 | 169128 | 58.22 | 7951 | 149811 | 53.07 |
| 1914 | 11674 | 249842 | 46.73 | 7045 | 135541 | 51.98 | 6520 | 123155 | 52.94 |
| 1915 | 15880 | 270488 | 58.71 | 11432 | 169827 | 67.32 | 9800 | 138336 | 70.84 |
| 1916 | 15488 | 307874 | 50.31 | 10088 | 170228 | 59.26 | 8889 | 158848 | 55.96 |
| 1917 | 15429 | 345721 | 44.63 | 10836 | n.a | n.a. | 8416 | 193628 | 43.46 |
| 1918 | 11653 | 334451 | 34.84 | 7695 | 172232 | 44.68 | 6414 | 195266 | 32.85 |
| 1919 | 9544 | 372341 | 25.63 | 10125 | 182361 | 55.52 | 4458 | 226502 | 19.68 |
| Average:1907-19 | | | 56.91 | | | 64.13 | | | 55.19 |
| Average:1907-16 | | | 63.47 | | | 66.93 | | | 62.15 |

Source: SAES (1974, p. 66-68).
Note: NR: Net receipts; TK: Volume of transport in thousands tons-kms; NR/TK: Net receipts per ton-km.

16 GAULD (1964, chapter XIV), Farquhar's biographer, claims that since 1913 Farquhar had been deliberately misinformed by the SRCL's manager in São Paulo, who supposedly tried to prevent a halt in the capital flows into the company .

*TABLE 9 – TRAFFIC COEFFICIENT (EXPENDITURE/RECEIPT RATIO)*

| Year | Sorocabana | Mogiana | Paulista |
|---|---|---|---|
| 1907 | 60.09 | 52.05 | 39.90 |
| 1908 | 56.25 | 54.35 | 44.57 |
| 1909 | 46.67 | 52.56 | 44.10 |
| 1910 | 49.14 | 62.31 | 45.02 |
| 1911 | 48.28 | 58.52 | 42.28 |
| 1912 | 52.06 | 54.98 | 44.70 |
| 1913 | 57.35 | 57.08 | 48.56 |
| 1914 | 58.60 | 67.81 | 50.36 |
| 1915 | 45.64 | 52.81 | 43.49 |
| 1916 | 53.55 | 56.59 | 47.38 |
| 1917 | 60.88 | 56.20 | 48.44 |
| 1918 | 70.79 | 65.48 | 57.53 |
| 1919 | 80.61 | 61.21 | 62.58 |
| Average:1907-19 | 56.92 | 57.84 | 47.61 |
| Average:1907-16 | 52.76 | 56.91 | 45.04 |

Source: SAES (1974, p. 186-188).

### *3.2 The Sorocabana Railway Company's Capital Structure*

The SRCL was virtually owned by the Brazil Railway Co. Ltd. (BRCL), a holding Percival Farquhar had incorporated in the United States in November 1906 and that embarked during the seven following years on an ambitious program of rapid expansion, widening and deepening the interests under its control. Its chief concern was railways: over that period, it acquired a significant stake in the Mogiana, the Paulista, and the Madeira-Mamoré and had, additionally, an interest in the Uruguay Railway Company (which had in turn a large stake in the five railway companies working in the Republic of Uruguay) and seemingly in the Antofagasta and Bolivia Railway Company.[17] Besides, the BRCL engaged in the construction of new railway lines, chiefly in the States of Paraná, Santa Catarina, and Rio Grande do Sul but also elsewhere, as was the case of the Madeira-Mamoré railway. On top of building and operating railways, the holding formed subsidiaries whose businesses were likely to profit from the development of a railway network, such as the Brazil Land, Cattle and Packing Company (with properties of more than 8 million acres) and the South Brazil Lumber and Colonisation Company. Also, the BRCL had concerns in the ports of Rio de Janeiro and Rio Grande do Sul and in the Companhia do Porto do Pará, which in turn had business interests in navigation through the Amazonas river and in the Madeira-Mamoré railway.

That intricate web of businesses suggests that Farquhar's purpose when he leased the Sorocabana went far beyond that deal itself, being part of a more ambitious strategy. According to the *Economist* (September 20th 1913, p. 535), the BRCL's president "*is credited with the intention of becoming the railroad magnate of South America.*" In the same vein, a BRLC' report explicitly asserted in 1910 that the company "*has for its object the connecting and consolidating of various railways operating in Southern Brazil, so as to create one comprehensive system, bringing into direct communication the States of São Paulo, Paraná, Santa Catarina e Rio Grande do Sul, and joining at the international boundaries with the railways of Uruguay, Argentine, and Paraguay." It was largely believed that Farquhar was endeavouring to create "a great transcontinental system across the heart of South America.*" The SRCL itself was connected with the São Paulo-Rio Grande Railway, linked in turn to the northern bank of the River Uruguay.

As far as the sources of funds for the BRCL's undertakings are concerned, it was almost entirely financed by dint of issues of shares, bonds and debentures. Shares of its operating and subsidiary companies served as collateral for the debt contracted. The proceeds for the payment of dividends, interest

17 *The Economist* (September 20th 1913) reported that the BRCL's last report had mentioned for the first time the Antofagasta and Bolivia Railway Company, which however was not included in the list of securities and properties owned by that holding. *The Railway News* (September 20th 1913) seems to be more affirmative with respect to BRCL having an interest in that company.

and amortisation were expected to spring from dividends paid by the companies whose shares made up the BRCL's portfolio. Earnings also could come from building railways (or extension thereof) belonging to companies wherein BRCL had stakes.

When the BRCL attained a new railway's concession, that "asset" was ascribed a value that needed not, and did not, maintain any strict correspondence with the actual expenditures spent on getting it. Then, this "asset" was incorporated into the portfolio of the BRCL at the value imputed by the company's founders, who in exchange were granted the equivalent amount in new shares of equity capital – that could be kept in their portfolio or sold on the market. It is noteworthy that although the BRLC was founded with a registered capital worth US$ 40 million, the actual capital disbursed by its founders was of just US$ 900 – a procedure in accordance with the corporate law of Maine, the state wherein the holding had been incorporated. As a French Plenipotentiary Minister on mission in Brazil, M. Wiener, pointed out in 1910:[18]

> "*Or, la Brazil Railway Co. procedera dans l'espéce comme l'a fait en maintes circonstances la Light and Power dont elle est l'une des créations: le groupe Mackenzie, Corthell, Farquhar, etc, formera, avec un capital-actions insignifiant, réservé aux fondateurs, une société ayant son siége dans une ville quelconque des Etats-Unis. Cette société demandera alors six ou sept cent millions à notre épargne contre la délivrance d'obligations ne conférant à leurs porteurs nul droit d'intervention dans la diréction de l'affaire.*" (FRANCE, Archives Nacionales, F-12, 9201).

Amaral (1915) also denounce Farquhar's strategy on the BRCL:

> "*What the Revue Franco Bresillienne reports us about the Brazil Railway Company gives a good idea of the modern processes undertaken by the Farquhar Syndicate. That company, which today monopolises a huge network of railways in Brazil,*

18 French officials made recurrent assessments of the BRLC's situation, inasmuch as a sheer bulk of its securities had been placed on the French capital market.

> *raised 420 million French francs in France in just four years and half – 181 millions of which were channelled into its founders' pockets as 'special payments' to which they were entitled, according they themselves say.*"

Since a great deal of the BRLC's critical assets involved the government's discretion – contracts for construction, franchises for the operation of railways, guarantees on and direct subsidies to the railway construction, and land grants – no wonder that its directorate had among its members Jorge Tibiriça, a former president of the State of São Paulo, and Alfredo Maia, who had been the superintendent of the Sorocabana when that company belonged to that state. As officials of the government, both had negotiated with Farquhar the concession of the Sorocabana.

Turning now to the SRCL's capital structure, it was as follows in 1915:

| | |
|---|---|
| 20,000 preferred shares: overall realised capital | US$500,000 |
| 80,000 common shares: overall value | US$8,000,000 |
| 4.5% 1st mortgage bonds (1910) | £4,000,000 |
| 5% 2nd mortgage bonds (1911) | £660,000 |

To pay the dividends to the shareholders and to service the debt to the bondholders, the SRCL depended not only on its net receipts (deducted the rents paid to the lessor – the state government) but also on the earnings stemming from its portfolio of shares and bonds issued by other companies. Predominant among those stakes were:[19]

a) 20,087 shares of the Companhia Paulista de Estradas de Ferro;

b) 50,000 shares of the Companhia dos Grandes Hotéis de São Paulo (Guarujá);

c) £287,500 worth of the 1st mortgage bonds issued by the Brazil Land, Cattle and Packing Co;

19 See FRANCE (Archives Nationales – Serie 65 AQ – E 676).

d) 16,132 preferred and common shares of FF 500 of the Cie. du Port de Rio de Janeiro;

e) 11,220 preferred shares of the Cie Auxiliaire de Chemins de Fer du Brésil;

f) 14,000 shares of the Cie de Chemins de Fer du Sud Ouest Brésilien.

The BRCL also had stakes in some of these same companies. In 1910 its asset portfolio embraced the following investments:[20]

a) 20,000 preferred shares of the Sorocabana Railway ;

b) 79,800 common shares of the Sorocabana Railway;

c) £175,000 worth of claims on the Sorocabana Railway;

d) 55,000 shares of the Cia Paulista de Estradas de Ferro;

e) 24,000 preferred and common shares of the Cie Auxiliaire de Chemins de Fer;

f) 36,000 common shares of the Cie Chemins de Fer Sud Ouest Brésilien;

g) 42,700 common shares of the Estrada de Ferro São Paulo – Rio Grande;

h) 48,750 common shares of the Estrada de Ferro Madeira-Mamoré;

i) 2,500 preferred shares of the Estrada de Ferro Madeira-Mamoré;

j) the whole capital of the Brazil Lumber Co.[21]

20 See FRANCE (Ministére des Affaires Etrangéres – Correspondence Politique et Commerciale, v. 29, p. 46-48).

Even though the dates for which information about assets and liability for both the SRCL and the BRCL is available are distinct, that set of information testifies the BRCL's overarching interests and helps to make it clear how SRCL was linked to that holding. The SRCL's capital stock belonged almost altogether to the BRCL. Thus, the SRCL' dividends – corresponding to the net operating receipt less the overall burden of the lease contract – were part of the BRCL's receipts, a fraction of which in turn was needed to meet its obligations related to the bonds and shares it had issued. This was a highly intricate scheme, since part of the liabilities issued by one of the BRLC's affiliate could be financed by another affiliate. On top of that, the BRCL and some of its affiliates sometimes had equity stake in the same affiliate or subsidiary: the SRCL, for example, had issued liability to acquire equity stakes in other companies wherein the BRCL also held investment– such as the Paulista, Auxiliaire, and Sud-Ouest Brésilien. Furthermore, a great number of the companies wherein the BRLC and the SRCL had an interest were in a formative stage, being still in course of construction and development, yielding low or even negative returns.

Although the SRCL's receipts net of the cost of the leasing can be estimated[22] – and Table 10 shows that they were significant over the period 1907-1917 – it is very difficult to reckon both the returns on its portfolio of securities and the burden associated to service its liabilities. Be that as it may, the sustainability of the highly leveraged scheme of expansion followed by the SRCL and the BRCL hinged on the rates of return on their investments,

21 Returns on these assets were the sources from which the BRCL's liabilities should have to be remunerated. In 1913 these liabilities comprised the following items:

| | |
|---|---|
| Common shares | US$32,000,000 |
| Preferred shares | US$20,000,000 |
| 4.5% 1st mortgage 60-year bonds | £9,475,000 |
| 4.5% bonds | FF86,500,000 |
| 5% 50-year debentures | US$1,510,500 |
| 5% Convertible bonds | £2,000,000 |
| *Overall capital* (FF) | FF653,000,000 |

Of that total, 31% were securities placed in the French capital market, 52% in England, 16% in Belgium, and 1% in other countries. (FRANCE – Ministère des Affaires Etrangères – Correspondence Politique et Commerciale – 1897-1918 – Volume 30 – Carton 150).

22 The estimate is calculated subtracting from the SRCL's net operating receipt the debt service paid to the Dresdner Bank and the amount of 25% over that receipt paid to the government of the State of São Paulo.

which should exceed in the long run the cost of their liabilities, as well as on the continuous availability of outside finance.

*TABLE 10 – THE SRCL'S RECEIPTS NET OF THE COST OF THE LEASE (MIL-RÉIS)*

| Year | (A): Operat. receipt (A) | (B): Oper. Expenditure | (C) = Op. balance = (B) - (A) | Charge to DB (£) (*) | (D): Charge to DB (mil-réis) (*) | (E):Net income= .75(C-D)(**) |
|---|---|---|---|---|---|---|
| 1906 | | | | 228000 | 3218824 | |
| 1907 | 12696599 | 7629310 | 5067289 | 228000 | 3576471 | 1118114 |
| 1908 | 12319958 | 6930095 | 5389863 | 228000 | 3609499 | 1335273 |
| 1909 | 14506106 | 6769454 | 7736652 | 228000 | 3619048 | 3088203 |
| 1910 | 13784962 | 6773695 | 7011267 | 336000 | 5071698 | 1454677 |
| 1911 | 14938527 | 6850629 | 8087898 | 330600 | 4928199 | 2369774 |
| 1912 | 16485729 | 8582914 | 7902815 | 325200 | 4838686 | 2298097 |
| 1913 | 18639883 | 10689279 | 7950604 | 319800 | 4749505 | 2400824 |
| 1914 | 15748727 | 9228887 | 6519840 | 314400 | 4736723 | 1337338 |
| 1915 | 18027576 | 8228140 | 9799436 | 309000 | 5555056 | 3183285 |
| 1916 | 19135671 | 10247253 | 8888418 | 303600 | 6031788 | 2142473 |
| 1917 | 20976708 | 12770338 | 8206370 | 298200 | 5644264 | 1921580 |
| 1918 | 21953562 | 15540170 | 6413392 | 292800 | 5405538 | 755891 |

(*) Expenditures on the debt service to the Dresdner Bank.
(**) Income net of the debt service to the Dresdner Bank and of the payment to the state of São Paulo (25% over the difference between the operating balance and the debt service to the Dresdner Bank).

Until 1912, neither the BRLC nor the SRCL seemed to face any major difficulty in raising money in international capital markets. Brazilian securities in general, and railway securities in particular, attracted considerable interest over the period 1910-12 (*The Economist* October 1st 1910, p. 663), what can be partly credited to the mounting prices and volumes of Brazilian export products as well as to the high level of dividend usually paid by the "coffee railways" (like the Mogiana and the Paulista) – generally above 10%. Perhaps the contemporaneous specialised newspapers and magazines further contributed to fostering the enthusiasm for the BRCL's securities.[23]

In the midst of 1912, however, uncertainty upon the feasibility of the BRLC's expeditious expansion plan began to be vocalised in the press. Announcements on investments made by the BRCL in Uruguayan railways as well as in the Antofagasta railway to purportedly form a railway network in the South America appeared to the market as a too ambitious undertaking. *The Economist* (August 31st 1912, p. 405) alerted that that scheme, notwithstanding alluring, was financially problematic, since the "*Brazil Railway's present construction programme will build lines quicker than the traffic can make them pay.*" It warned in addition that "*considerable sums of new capital will have to be raised*" and that the company's securities other than the 4.5% first mortgage bonds "*are more speculative*".

In fact, the prices of the BRLC's securities began to fall at the end of 1912. The price of its shares traded on the Paris Stock Exchange fell dramatically in December 1912 (from FF572 in November to FF456). In London, the price of the BRCL's common stock fell following the announcement that payment of ordinary dividends was not on the horizon; the same happened to the price of the 6% preferred stocks. *The Economist* (September 20th 1913, p. 535) mentioned that "*some sections of the Brazilian public have become alarmed at the rate at which Mr Farquhar's control in Brazil is extending.*" It forecasted that, despite "*the rate of progress in the last five years, a slowing down must be expected, if only to give time for some of the capital expended to become remunerative.*"[24] Analysing the company's financial accounts, that newspaper criticised their poor level of transparency, since they little infor-

23 As a case in point, *The Economist* (October 1st 1910, p. 664) reported that "*almost the entire transportation of coffee in the State of São Paulo – which supplies nearly 70% of the world's requirements – is handled by these two companies (*Paulista and Mogiana*), in which the BRC is largely interested, and by the Sorocabana Railway, which is controlled and leased by the BRC. It will be seen, therefore, that the BRC operates and is interested in a series of railways, showing at the present time large earnings, and in other railways under construction, which, when placed into communication with the former, will yield results equally good…These lands* (granted to the BRLC and situated along the line of the São Paulo-Rio Grande Railway) *should become of great and increasing value to the company. In the Argentine land has increased more than ten times in value since the railways in that country were constructed*." Announcements and circulars reporting Brazilian government decrees favouring the BRCL' subsidiaries and concerns were also frequently published in those newspapers. (See, for example, *The Economist* December 10th 1910, p. 1194).

med how the huge increase in liabilities over the period 1910-1912, mainly through debt, had actually been applied. It also observed that almost no information about the "*revenue-producing assets, and their financial position with regard to the parent company*" was disclosed.[25]

The arrangement conceived by Farquhar was definitely collapsed with the outbreak of the First World War, which brought to bear intense pressure on the SRCL and the BRCL. Disruptions in the international trade and in the international capital flows led to strong devaluation of the mil-réis and forced the Brazilian government to default on their external debt. In 1915, the SRCL just met the service of its 1st mortgage debt, failing to pay dividends and the services of both the other mortgages and the floating debts. In other words, its operating balance added to the earnings coming from some of its stakes in other companies were insufficient to cover its debt obligations as well as the dividends for its shareholders (ultimately, for the BRCL's shareholders). Failing to pay dividends, the SRCL aggravated the BRCL's financial situation, already strongly hit by the bad performance of other companies under its control. No wonder that the BRCL went into receivership, a process whose final solution, its disintegration, would come out only in the 1930s.[26]

The SRCL's dire financial straits affected dramatically its operations: the maintenance of the machinery, tracks and general infrastructure became increasingly poor, giving rise to a high number of accidents in its lines (unlike Mogiana, which had almost none). Further evidence on the worsened quality of the SRCL's services was the low replacement rate of rails and crossties

24 That newspaper was very sceptical regarding the prospects of the BRLC in 1913: "*the need will be for money, and a large bond issue on the Continent has been announced this week. Money must be had to continue the construction programme and to meet the bond interest and preference dividends, which last amounts will this year absorb large sums. Investors in Brazil Railway securities are putting their money on a very dark horse, and some of them have reason to regret their purchases, for there has been much speculation in the stocks, and the general weakness on the Stock Exchange during this year caused a shake out in the securities. It is an extraordinary thing that the common stock, which had never received a dividend, and, unless a very shortsighted financial policy is adopted, ought not to receive one for a very long time, was dealt in at over 120 in 1912. Its present price is 53, but it is a football of speculation, and in the course of a few months its price is as likely to be over par as it is to be under 20.*" In fact, the BRCL 6% non-cumulative participating preference shares declined from 119 to 72 between the end of September 1912 and the end of September 1913 – a 47% drop. (*The Economist* October 11th 1913). An article published on another issue of this newspaper (January 17th 1914) interpreted this fall as indicating that "*uneasiness was felt regarding the ability of the company to meet the dividends in full out of the earnings of the year.*"

vis-à-vis what would be technically recommended. (DUNCAN, 1932). The awful conditions to which SRCL had been left were clearly portrayed by C. de Paula Souza, the Sorocabana's General Inspector nominated by the Government of São Paulo after the friendly abrogation of the lease contract (agreed on September 9th 1919):

> "*The conditions of the Estrada de Ferro Sorocabana in August 1919, when it became to be run by the State, were as follows: warehouses replete with goods awaiting transport; houses close to the stations overloaded with staples to be dispatched; frequent interruptions owing to the bad state of the locomotives; trains halted for a long time at stations because of lack of water; a large number of vehicles put aside for not being in conditions of use; buildings without maintenance; the bed on which the railway track laid missing the requisite safety; bad and deficient distribution of water tank. The Sorocabana Railway's managerial neglect had gone so far that, besides the large number of vehicles awaiting to be repaired at the workshops' neighbourhood, there was a large quantity of iron pieces and parts, which helped to set up two locomotives and sixty wagons.*" (COMPANHIA SOROCABANA, 1920, p. 3-4).

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25 According to *The Economist* (September 20th 1913), bonded debt escalated from $39,991,481 in 1910 to $75,169,052 in 1912, while loans and obligations to creditors increased from $17,972,987 to $23,087,691. At the asset level, the item "*shares, debentures, and interests in other companies, lands, buildings, leases,* &c., *at cost (including preliminary and special financial expenses*)" showed an increase of almost 50% (from $77,055,163 to $113,897,169); the item "*discount and commission on bond issues*" enlarged its fraction of the overall assets from 7% in 1910 to 12% in 1912. Amounts due from subsidiaries also increased dramatically: from $2,053,727 to $13,000,000, mostly of which owing to expenditure on construction. Analogously, the revenue account was blamed on account of its lack of transparency. In particular, the item of "construction profits", amounting on average to $650,000 a year over 1910-1912, was said that it "*can hardly be otherwise than 'paper profits', since it represents an addition to the cost of subsidiaries' lines over and above their cost to the contractors*." Another issue of *The Economist* (August 31st 1912, p. 405) underlined the significant slice of the BRCL's income coming from the construction of lines for its subsidiaries or companies wherein it had interests (more than 10% in 1911).

26 DUNCAN (1932, p. 76) traces back the BRCL' distress to an earlier period. As he put it, "*In 1914 the Brazil Railway Company, a holding and operating company that held all the capital stock of the* Sorocabana *Railway Company, went into the hands of a receiver. The company was chartered in Maine in 1906 and paid its first dividend on its preferred share in 1910. This shows that it had been in difficulties prior to the World War.*" Nonetheless, according to a report made by the Ministère des Affaires Etrangères (1914, v. 32, p. 115), the BRCL's financial situation had been of increasing progress over the period 1909-1912, net receipts leaping from FF 2.3 million to FF 9.5 million.

Notwithstanding some rhetorical excess, that description is in accordance with other contemporaneous reports concerning the carelessness with both the lines and the fixed and rolling stock, jeopardising therefore the railway's operating capacity. The SRCL's desperate financial situation coupled with the absence of effective monitoring from the lessor gave ample room and incentives for managerial moral hazard.

A question that remains to be untangled is the motivation behind the wide and somewhat intertwined portfolios held by the SRCL and the BRC. Would it ultimately be the building up of a complex network of transport in Southern America with a view to exploiting monopolistic rents?[27] That strategy could be reached by the greater capacity of the SRCL and the BRCL to tap international capital markets vis-à-vis those companies wherein they themselves invested. In this respect, one conceivable interpretation of the fact that SRCL continued to service its 1st mortgage debt even after the start of the World War is that it wished maintain creditworthiness in order to raise further capital. Their broad (and to some extent overlapping) portfolios could also be a mechanism to expropriate uninformed European savers whose fascination then to the thriving international capital markets rendered them willing to part with their money to promoters of projects in distant developing countries. In this respect, any new undertaking could proportionate high gains for its founders (Farquhar and his associates), who could sell new shares for a value exceeding several times the underlying outlays. However plausible, these hypotheses call for further investigation since no compelling empirical evidence is available to accurately appraise them.

## *CONCLUDING REMARKS*

As regards the question raised at the beginning of this paper – namely, *why was the Sorocabana, unlike Mogiana and Paulista, in dire financial conditions almost throughout the period 1872-1919?* – our main findings can be summa-

27 It is worth noting that the Banque de Paris et de Pays Bas, then under Farquar's control, owned a 25% stake in Mogiana in 1911 (its largest shareholder) and 11.25% of Paulista's overall capital shares in 1909. At a general meeting of Mogiana's shareholders on 28-6-1911, one same proxy, Paulo Bozzano, was there on behalf of the Banque de Paris et de Pays Bas, the BRCL, the Sudameris, the Caisse Generale, and the Banque de Reports et de Dêpots.

rised as follows. First, there always prevailed highly optimistic expectations with respect to the Sorocabana's prospects, not least because the traditional "coffee railways" (Paulista and Mogiana) signalled that the railway business might be very profitable. Nevertheless, both cotton and, later, coffee failed to afford a demand for freight high and profitable enough to convince other investors to provide the amount of equity capital needed to undertake the ambitious project envisaged by Sorocabana's keen founders. They had to rely mostly on foreign debt finance, whose supply appeared unbelievably elastic in the light of the absence of governance mechanisms. However, operating balances did not keep pace with the soaring costs of debt service, deepening the reliance on borrowings, what led to a debt overhang. Thus, the fact that the Sorocabana was overburdened with debt during the whole period under analysis seems to be crucial to understand its recurrent failures.

As for the explanatory power of bad governance, the lack of mechanisms that could have contributed to alleviate the selection and incentive problems evidently provided ample room for managerial inefficiencies or investors' outright expropriation. The institutional environment was highly biased in favour of managers and controlling shareholders: very low or no legal protection for non-controlling shareholders and bondholders, trifling disclosure requirements of companies' financial information, unreliable enforcement of contracts and so forth. Monitoring from those supplying finance or guarantees or from the lessor appeared to be poor, if any. Conceivably, a number of factors contributed to give managers and controlling investors huge latitude for managerial moral hazard at the expense of bondholders and minority shareholders. Probably, opportunistic behaviour prevailed regarding the maintenance of the BRCL's equipment and infrastructure once it was under receivership after 1915. Notwithstanding, no clear-cut evidence is available to endorse the mismanagement view as the cause of the Sorocabana's dismal performance for the whole period. As Duncan (1932: 64) puts it for the period prior to 1902: "*there is no sufficient evidence on which to decide whether the management of the Companhia União Sorocabana e Ituana was inefficient.*"

Furthermore, the Sorocabana's difficulties could spring from bad governmental policies or still from unforeseeable external shocks – such as sudden halts in foreign capital inflows, changes in the terms of trade, outbreaks of wars, and so on. Although this paper has not centred on these issues, it seems unquestionable that undertaking business in peripheral countries was much riskier, since these countries were highly prone to macroeconomic turmoil. In this respect, sharp devaluation placed further financial burden to the Sorocabana, given the currency mismatch between its receipts (in mil-réis) – occasionally imperfectly indexed to exchange rate movements – and its liability.[28]

Finally, it would be possible to draw a parallel between the bankruptcies Sorocabana faced at the turn of the 20th century and at the end of the 1910s. In both episodes, the company was teetering on the brink of disaster by "endogenous failures": a combination of unfulfilled overoptimistic expectations about increases in coffee freight receipts, reckless financing and probably poor management and governance. The collapse became insurmountable when exogenous shocks hit the economy (the Baring crisis in 1890 and the First World War), leading to devaluation of the domestic currency and macroeconomic crises.

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28 The controversy on the roots of the devaluation in the 1890s might also be regarded as bad policy (excessively loose monetary policy) versus bad luck (the "contagion effect" produced by Argentina's default.

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